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Karl Ludwig von Littrow was the son of Professor J. J. von Littrow, formerly Director of the Imperial Observatory at Vienna and the author of several important papers on astronomical and physical subjects, some of which were contributed to the Royal Astronomical Society, and may be found in the first four volumes of the *Memoirs*. Before Dr. J. J. von Littrow's appointment in 1819 to the Observatory at Vienna, he held the Professorship of Astronomy in the University of Kasan, where his son Karl was born on July 18, 1811. The elder Littrow personally superintended the education of his son from an early age, and thus the latter soon acquired that taste for astronomical pursuits which ultimately led him to follow in the footsteps of his father as a professional astronomer. On the completion of his education, he accepted, in 1831, the position of assistant-astronomer in the Imperial Observatory of Vienna.

A few years after his appointment to the Observatory, Dr. K. von Littrow made a very valuable contribution to the history of astronomy by his publication of Father Hell's account of his observations of the transit of *Venus* in 1769 at Wardhoe, derived from that observer's original daybook, to which his official position gave him access. This work, *Reise nach Wardoe bei Lappland und seine Beobachtung des Venus-Durchganges in Jahre* 1769, was published in 1835, and it gives a faithful transcript of Hell's apparently doubtful observations, which had formed the subject of much unfavourable criticism since the publication of Encke's treatise on the transit of *Venus* in 1769. By a careful examination of a *facsimile* copy of the original, Mr. Stone, in his recent discussion of the observations of that transit, was able to explain much that appeared to be doubtful, and to interpret the entries in such a manner as to show the probable truthfulness of the observations. Soon after the appearance of this work, by which the name of the younger Littrow became known in our science, independently of that of his father, he made the first of his long series of communications to the *Astronomische Nachrichten* in the form of a note, containing the results of his observations of Halley's Comet, a class of work to which for some time he particularly devoted himself. It is not necessary here to give in detail the names of the various newly discovered planets and comets which occupied his attention, both before and after his father's death, but it will be sufficient to remark that in the *Astronomische Nachrichten* alone may be found abstracts of his equatoreal observations of more than thirty comets, in addition to similar abstracts of the results of his observations of most of the early-discovered minor planets, including several elements of their orbits. The results of his observations of the great comet of 1843, Colla's Comet, and others were communicated to this Society, and they appear in the *Monthly Notices*.

In 1840 the directorate of the Observatory of Vienna became vacant by the death of the elder Littrow, and there appears to have been some difficulty in choosing his successor. In 1842, however,

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the vacancy was filled by the appointment of Dr. K. von Littrow, whose qualifications for the office have been so well proved by his able administration during the last thirty-five years. He also succeeded his father in the Professorship of Astronomy in the University of Vienna. During his long superintendence of the Observatory the general operations of the establishment were confined chiefly to equatoreal astronomy, especially in relation to new cometary and planetary discoveries, in the carrying out of which the Vienna astronomers have always taken more than usual interest. Several important investigations on the orbits of particular comets have also been undertaken by Professor von Littrow and the assistant-astronomers, Hornstein, Oeltzen, and Weiss. The *Annalen der Sternwarte in Wien* contain the results of many of the most important researches emanating from the Observatory, among which may be found Oeltzen's Catalogue of Argelander's northern zone observations of stars between 45° and 80° declination reduced to 1842. This excellent catalogue appeared in two parts, one in 1851 and the second in 1852; and though it might with advantage be more conveniently arranged by the addition of columns with the annual precessions, so that the places of the stars might be more easily reduced to another epoch, still it is found of great use at the present time for the identification of many small stars observed with comets or other objects, but not included in other catalogues.

Professor von Littrow communicated several papers to the Vienna Akademie der Wissenschaften, which are printed in its *Sitzungsberichte*. He has also contributed to the proceedings of other societies. In the *Monthly Notices* there are several notes forwarded by him to the Royal Astronomical Society, including one on the rectification of equatoreals by observations of stars on the meridian and at an hour-angle of six hours; and another on a method of determining the latitude at sea. In 1864 he requested M. Faye to lay before the French Academy of Sciences a new method for determining the time and the longitude at sea, which was tried during the scientific voyage of the Austrian frigate, the *Novara*, and adopted by Admiral von Wüllerstorf as part of the daily routine of the vessel. This method consists in the determination of the time by two circum-meridional observations of the Sun, preserving at the same time the observation of the true noon for latitude, the two altitudes being taken at pleasure on the same side or on the opposite side of the meridian. Professor von Littrow was also the editor of his father's well-known treatise on popular astronomy, *Die Wunder des Himmels*, which has passed through several revised editions. This work is divided into four parts, the first of which treats of theoretical astronomy; the second part relates chiefly to descriptive astronomy and the topography of the heavens; the third is devoted to physical astronomy; while the fourth refers to the explanation of the construction and use of astronomical instruments. The atlas, which forms a suitable addition

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to the work, *Atlas des gestirnten Himmels für Freunde der Astronomie*, has also been revised by Dr. K. von Littrow.

It was principally through the representations of Professor von Littrow, that the Imperial Academy of Sciences at Vienna proposed in 1869 a scheme for awarding a series of prizes, limited to eight annually, for the discovery of telescopic comets during the three years' interval between May 31, 1869, and May 31, 1872. The prizes to be awarded consisted either of a sum of money—twenty Austrian ducats—or of a gold medal of equivalent value. The scheme was faithfully carried out, and before Professor von Littrow's death it was proposed to the Academy to continue the prizes for another term.

The situation of the Vienna Observatory, in the midst of narrow streets, has long been felt as a serious hindrance to the prosecution of any delicate astronomical work. The present building was erected in 1826–27, under the direction of Professor J. J. von Littrow, on the site of the old Observatory, founded in the year 1753, Father Hell being the first director. The requirements of astronomy of the present day in a national Observatory induced Professor von Littrow to represent to the Austrian Government the desirability of removing the Observatory to a more favourable position out of the city. This recommendation was acceded to, and in 1873 the sanction of the Minister of Public Instruction was obtained for the erection of a building capable of containing instruments of the largest construction, and fitted with every astronomical appliance required in the pursuit of meridional, equatoreal, or physical observations. The foundation stone of the new Observatory was laid in June 1874, about three miles to the north of the centre of Vienna, and at the present time is approaching completion. Professor von Littrow was not permitted to see the full effects of his design, but the works were sufficiently advanced before his death to enable him to foresee the material advantage which astronomy has gained by the increased accommodation in the new Observatory, and the absence of the noise and dirt which so injuriously affect the observations in the present building. Among the instruments which it is proposed to erect, the great refractor of 26 inches aperture is the most noted. This instrument is in progress of construction by Mr. Howard Grubb, of Dublin.

Professor von Littrow was elected an Associate of our Society in April 1853. He was also a corresponding member of several other scientific societies. His death took place on the morning of November 16, 1877, at Venice, where he had gone for the benefit of his health. He was in the sixty-seventh year of his age.

E. D.

GIOVANNI SANTINI was born on the 30th of January 1786 or 1787 (both dates have been mentioned), at Caprese, near Borgo di San Sepolcro, in the province of Arezzo, Tuscany. In early